What's Green About White Flint

John Thomas, PhD
US EPA Smart Growth Program
White Flint Partnership, Sept. 25th, 2009

The Context for the White Flint Plan

- Changes in the Federal Policy Landscape
- Changes in the Real Estate Market
- Environmental Impacts in a Regional Context
  - The Paved Footprint of Growth
  - The Carbon Footprint of Growth

HUD DOT EPA Sustainable Communities Partnership

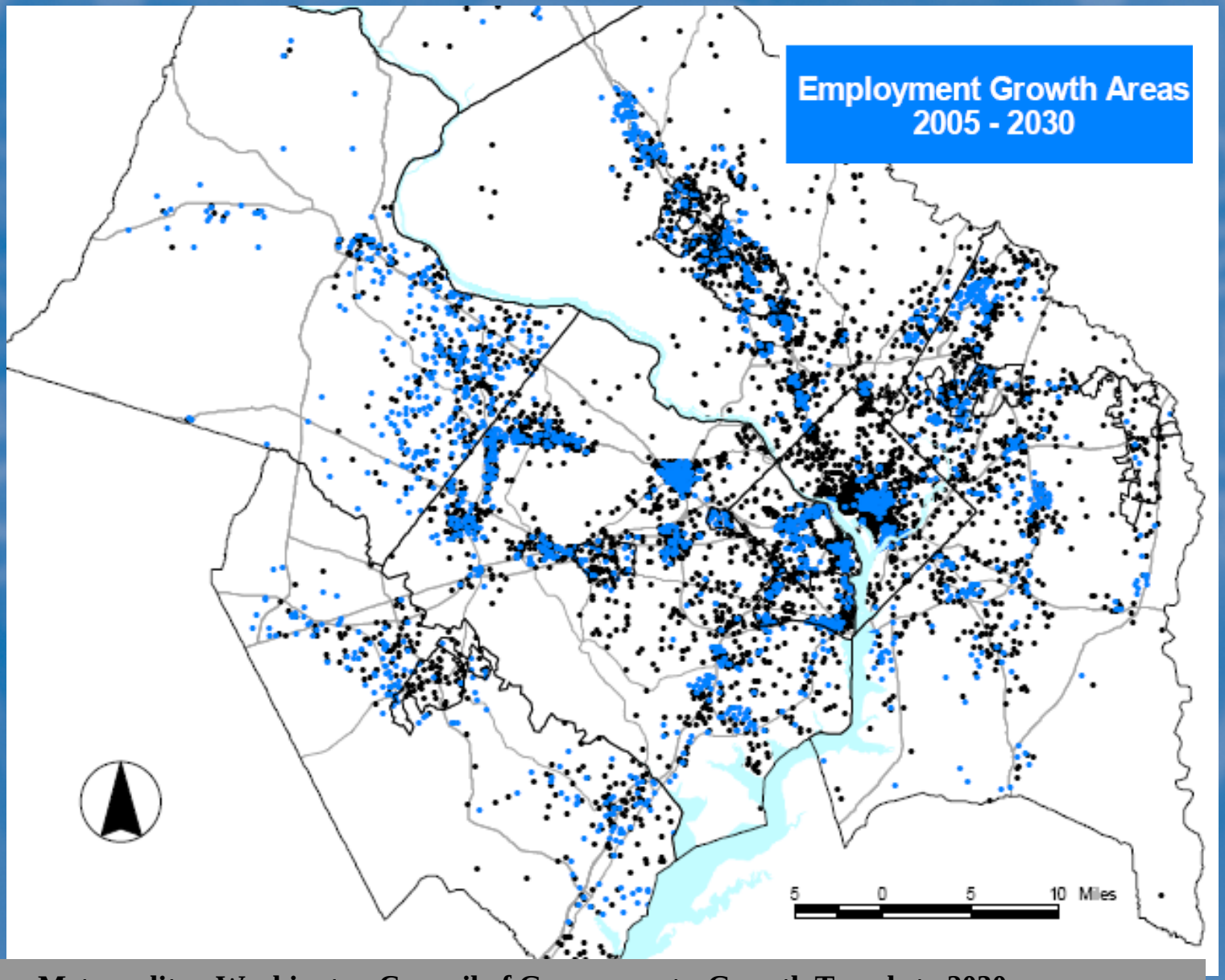
- More transportation choices
- Promote equitable, affordable housing
- Increase economic competitiveness
- Support existing communities
- Leverage Federal Investment
- Value communities and neighborhoods

Climate Change Legislation (HR 2454) Section 222 "Transportation Efficiency"

Regional Planning Strategies Identified in the Bill

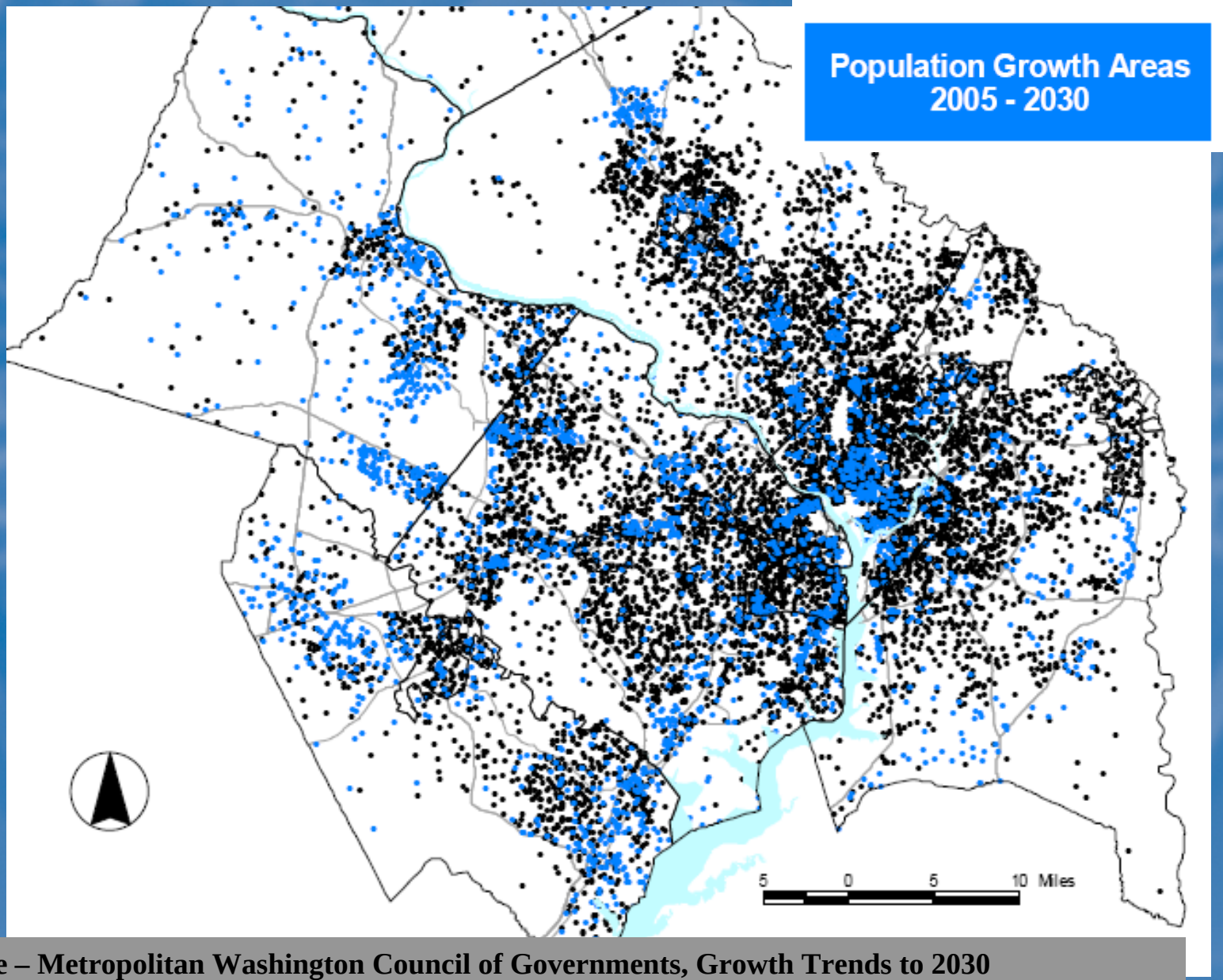
- Updates to zoning and other land use regulations and plans to support development that…
  - coordinates transportation and land use planning;
  - focuses future growth close to existing and planned job centers and public facilities;
  - uses existing infrastructure;
  - promotes walking, bicycling, and public transportation use; and
  - mixes land uses such as housing, retail, and schools
- Implementation of a complete streets policy

The Regional Context -Where will new jobs be?



Source – Metropolitan Washington Council of Governments, Growth Trends to 2030

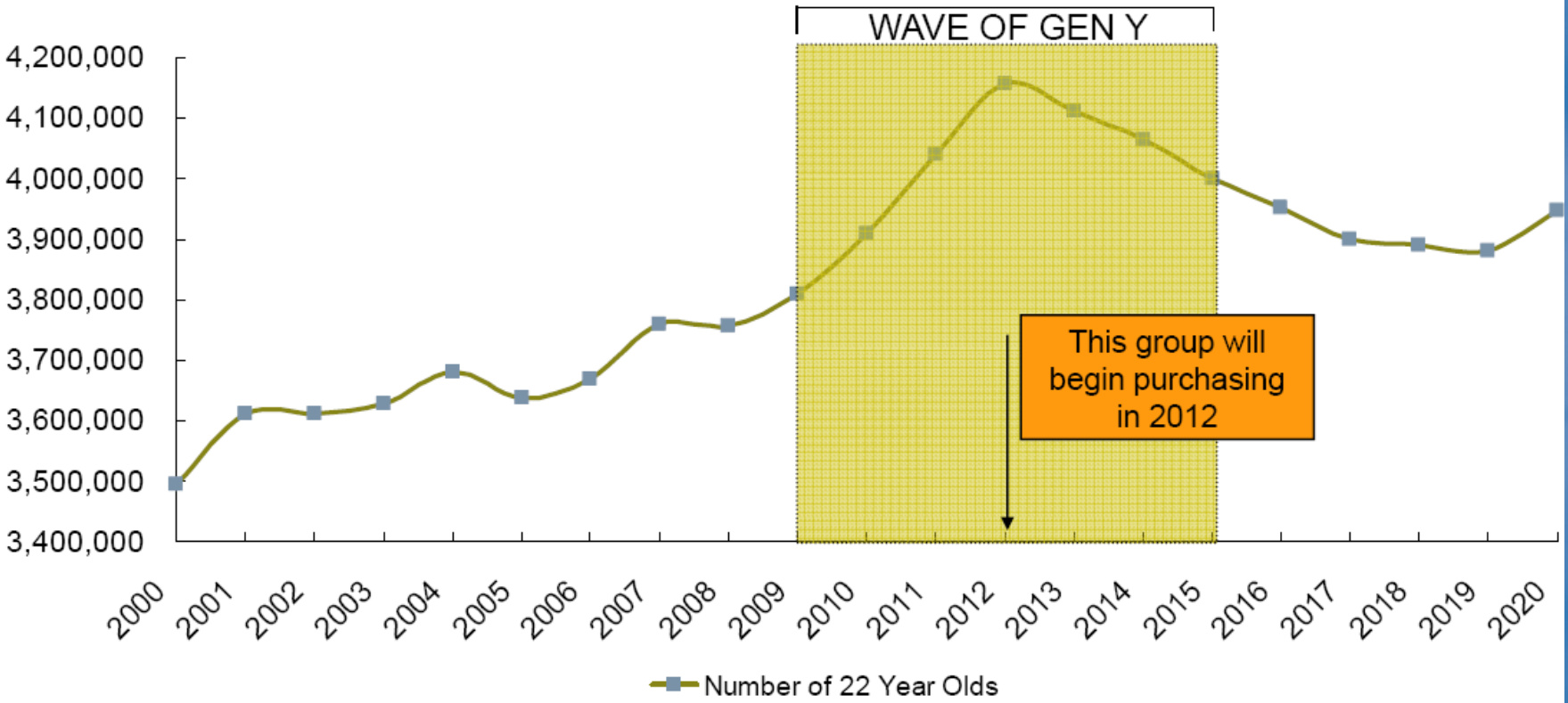
Where will new homes be built?



Source – Metropolitan Washington Council of Governments, Growth Trends to 2030

Market Trends – Emerging Gen Y Research

IN 2009, THE UP TICK OF GRADUATES ENTERING THE RENTAL MARKET WILL BEGIN; THEY WILL BEGIN BUYING IN 2012



RCLCO Consumer Research shows:

- 41% of Generation Y plan to rent for at least three years
- 77% of Generation Y plan to live in an Urban Core

NOTE: Number of 22-year olds is based upon birth rate and does not factor in death rates and migration.

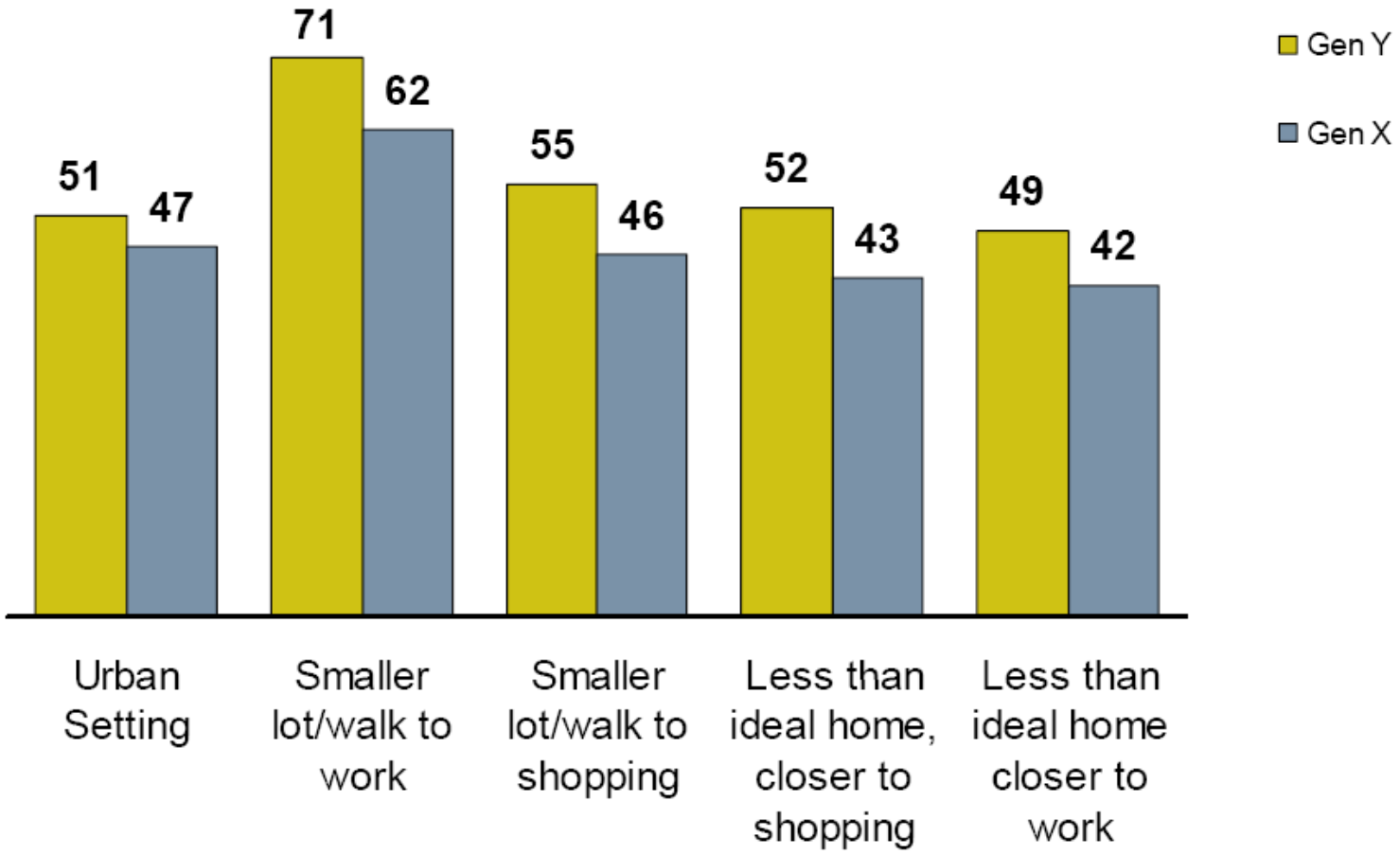
SOURCE: U.S. Centers for Disease Control and Prevention

RCLCO ROBERT CHARLES LESSER & CO

Source: Shyam Kannan, RCLCO

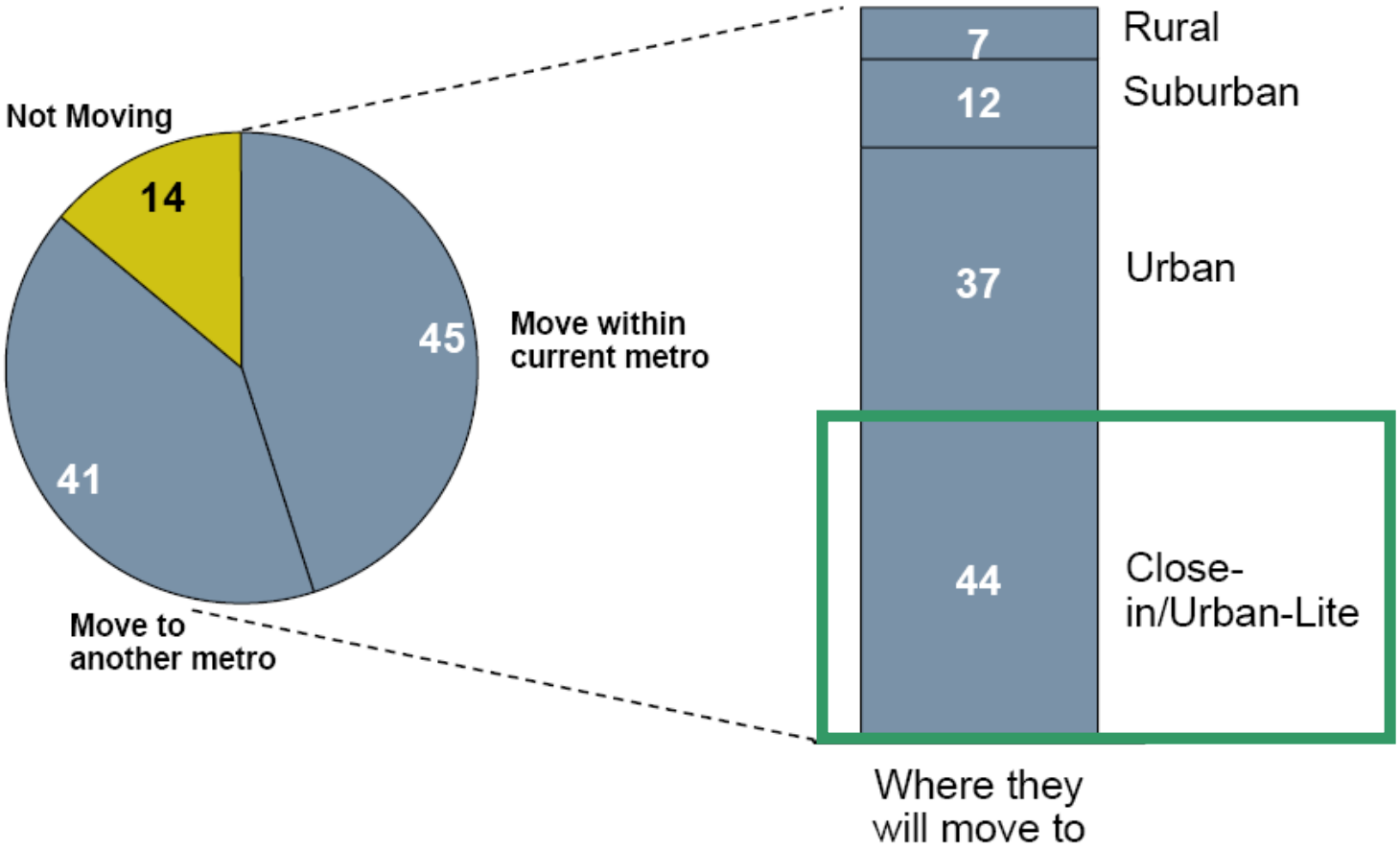
GENERATIONAL TRADE-OFFS INCLUDE MORE FOCUS ON COMMUNITY RATHER THAN HOME

Generational Tradeoffs (%)



88% OF GEN Y RENTERS ARE MOVING
MOSTLY GOING TO URBAN-LIKE LOCATIONS

Movement of Gen Y Renters (%)



Why Does the Regional Context Matter?

- From an environmental standpoint two key indicators of sustainable development….
  - The Pavement Footprint
    - Stormwater runoff & water quality
    - Preservation of natural lands
    - Public infrastructure costs
  - The Carbon Footprint
    - Greenhouse gas emissions
    - Regional air quality
    - Energy security

Two Views of Development's Carbon Footprint

CO2 per Acre From Household Auto Use CHANGE

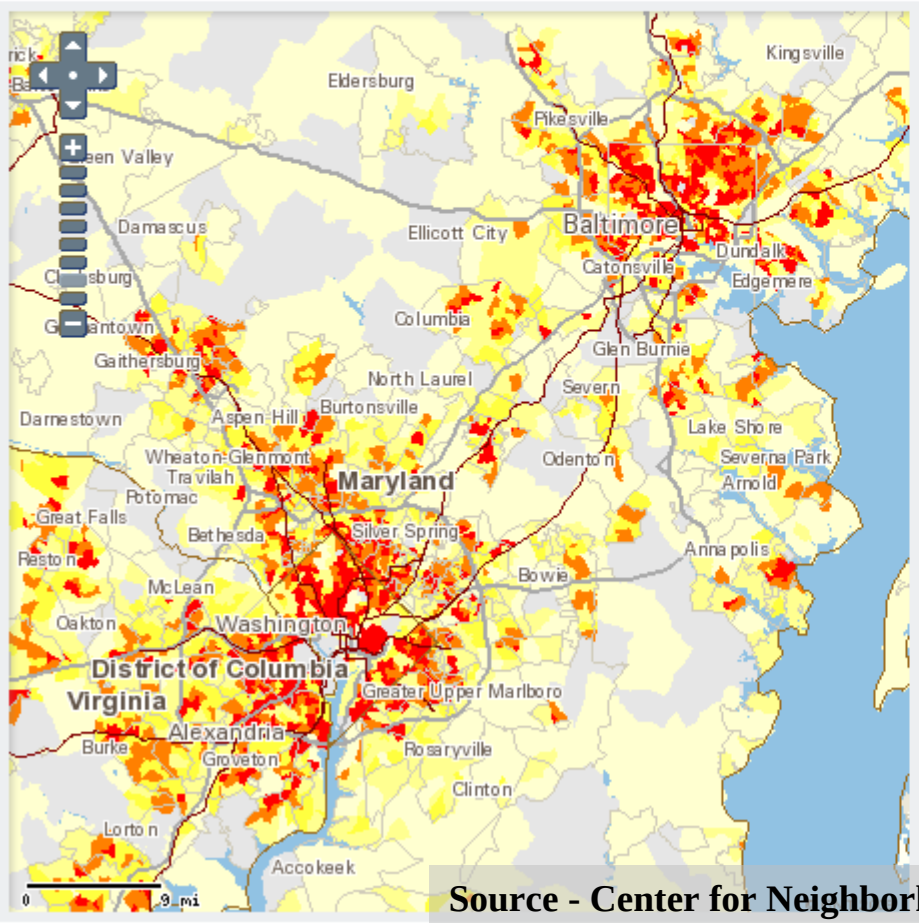
- Data not available
- 0 to 6 Metric Tons/Acre
- 6 to 14 Metric Tons/Acre
- 14 to 20 Metric Tons/Acre
- 20 to 30 Metric Tons/Acre
- 30+ Metric Tons/Acre

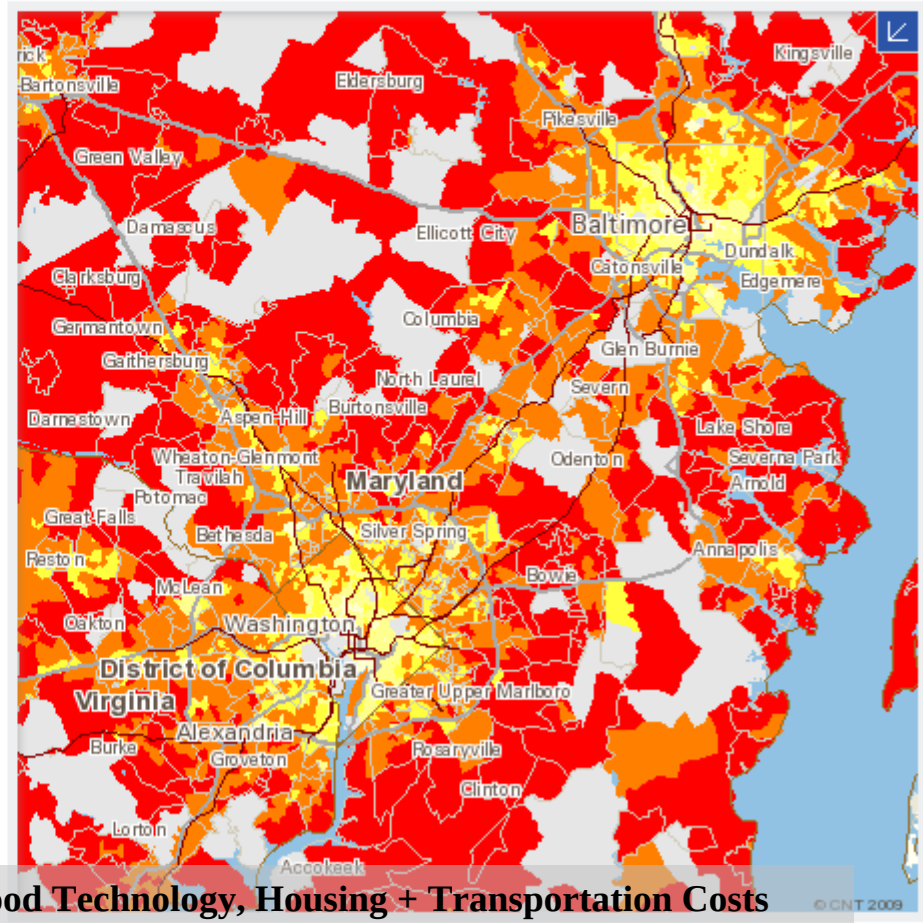
Total CO2 emissions are calculated for the Block Group and then divided by the total area of the Block Group. This method of measuring emissions will show that areas with more households tend to produce more carbon dioxide per acre.

CO2 per Household From Household Auto Use CHANGE

- Data not available
- 0 to 3.3 Metric Tons/HH
- 3.3 to 5.1 Metric Tons/HH
- 5.1 to 6.5 Metric Tons/HH
- 6.5 to 8.6 Metric Tons/HH
- 8.6+ Metric Tons/HH

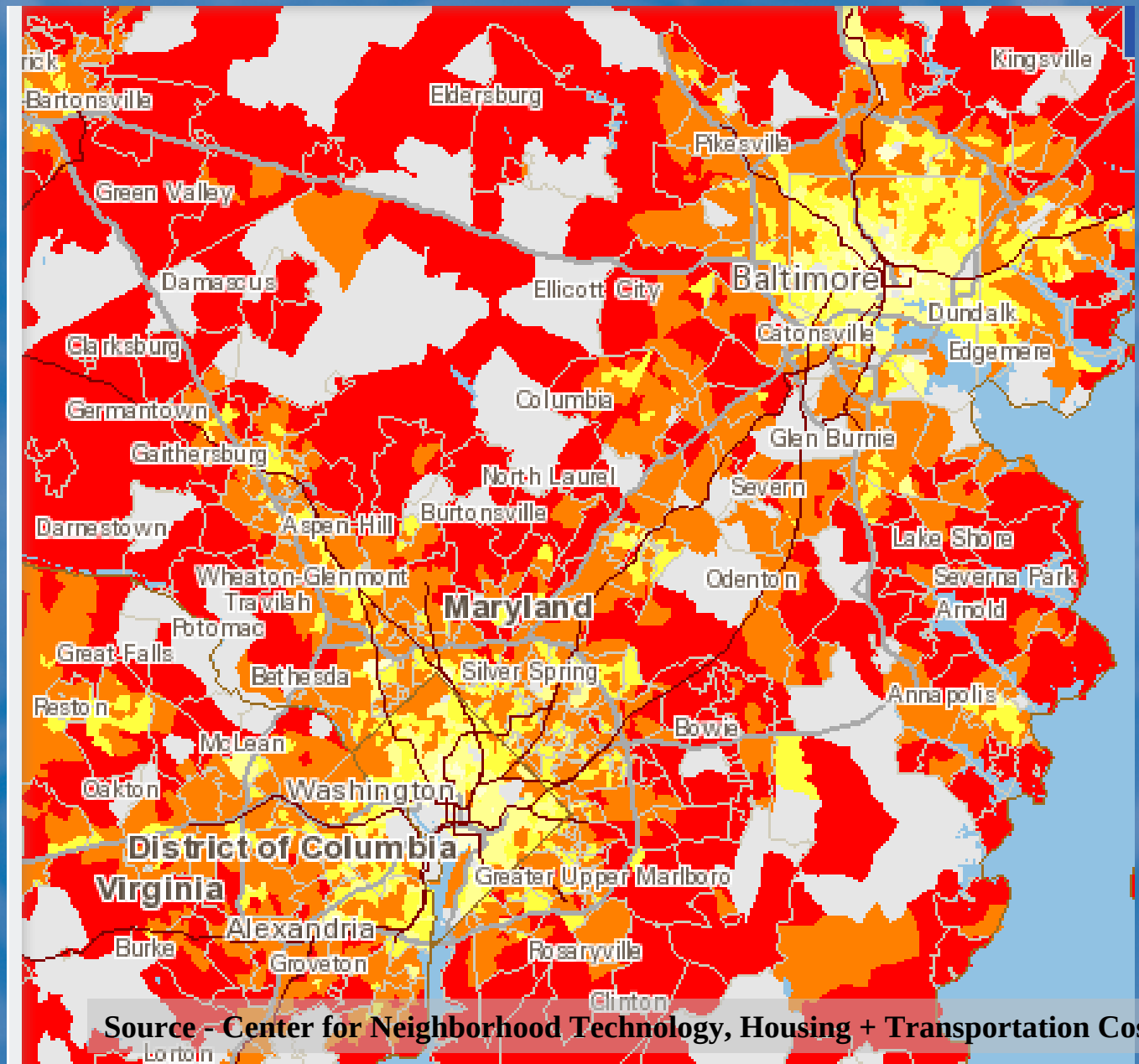
Total CO2 emissions are calculated for the Block Group and then divided by the total number of households in the Block Group. This method of measuring emissions shows that in areas where there are more households, average emissions tend to be lower per household.





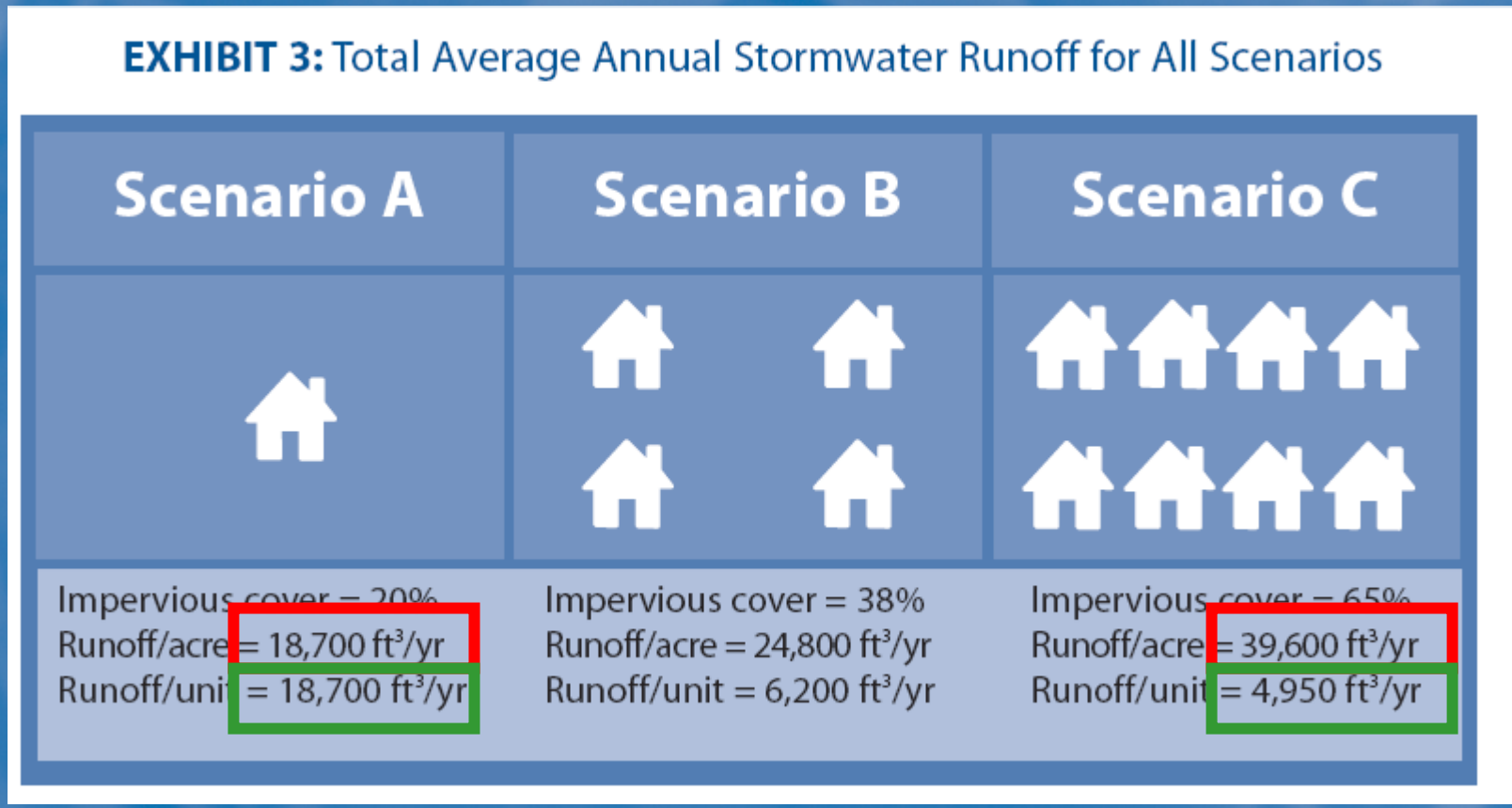
Source - Center for Neighborhood Technology, Housing + Transportation Costs

Two Views of Development's Carbon Footprint



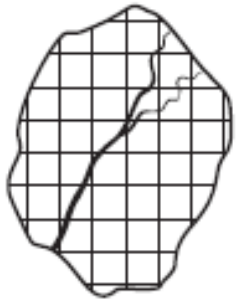
Source - Center for Neighborhood Technology, Housing + Transportation Costs

Two Views of Development's Pavement Footprint



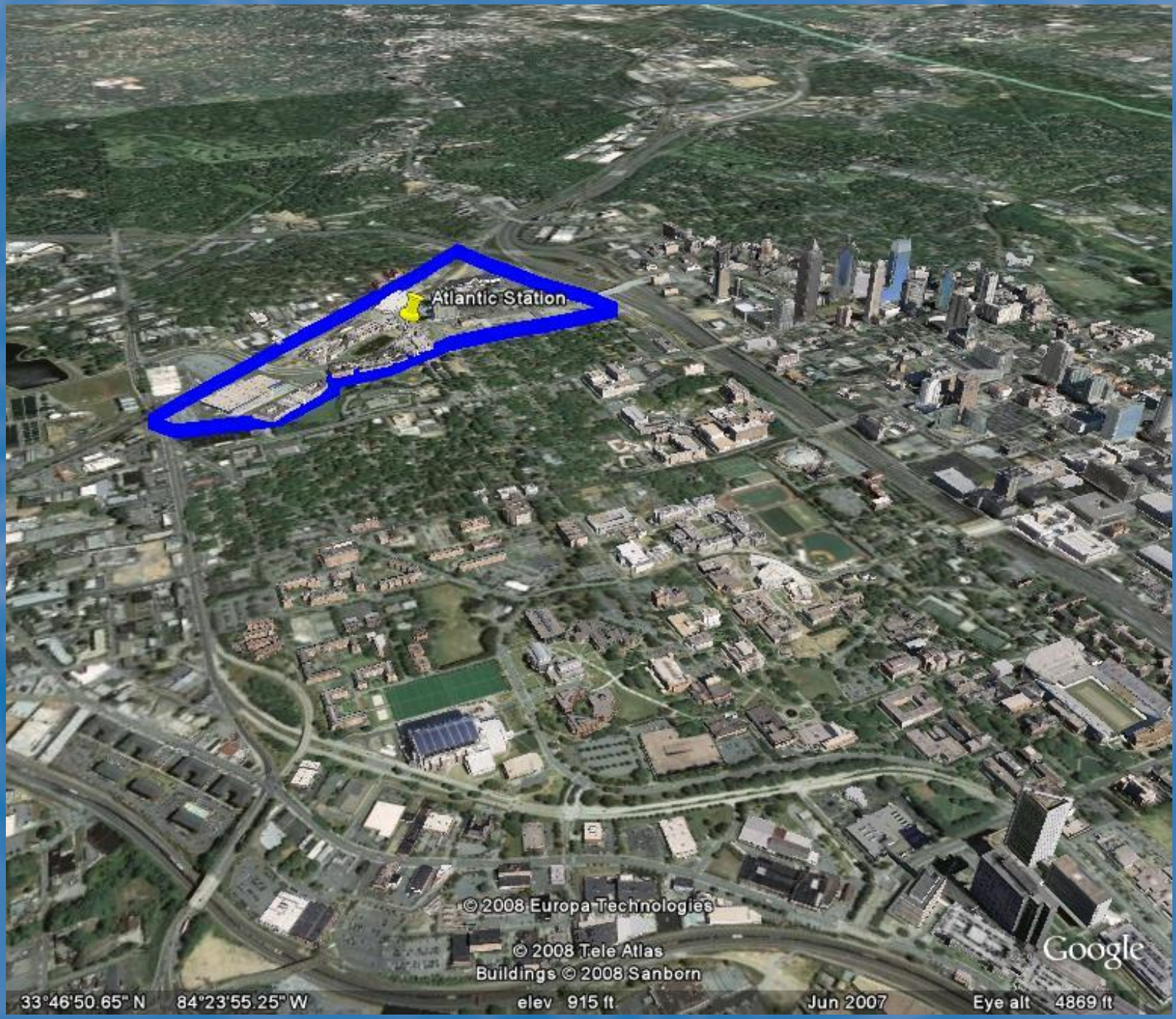
Source – EPA (2006) Protecting Water Resources with Higher-Density Development

Two Views of Development's Pavement Footprint

Scenario A	Scenario B	Scenario C
		
10,000 houses built on 10,000 acres produce: 10,000 acres x 1 house x 18,700 ft^3/yr of runoff = **187 million ft^3/yr of stormwater runoff** **Site: 20% impervious cover** **Watershed: 20% impervious cover**	10,000 houses built on 2,500 acres produce: 2,500 acres x 4 houses x 6,200 ft^3/yr of runoff = **62 million ft^3/yr of stormwater runoff** **Site: 38% impervious cover** **Watershed: 9.5% impervious cover**	10,000 houses built on 1,250 acres produce: 1,250 acres x 8 houses x 4,950 ft^3/yr of runoff = **49.5 million ft^3/yr of stormwater runoff** **Site: 65% impervious cover** **Watershed: 8.1% impervious cover**

Atlantic Station - Outcomes

- Original EPA estimate = VMT 50% less than comparable greenfield sites
- Monitoring surveys
  - *Atlanta Regional Average*
    - 32.4 miles/day per household
  - *Atlantic Station*
    - 13.9 miles/day per households
  - 19% of trips are by transit (ARC 2008)
  - Roughly 40% of all trips stay on site
    - 80% walk trips


Atlantic Station
© 2008 Europa Technologies
© 2008 Tele Atlas
Buildings © 2008 Sanborn
Google
33°46'50.65" N 84°23'55.25" W
elev 915 ft
Jun 2007
Eye alt 4869 ft

TOD Traffic Compared to Traditional Projects

TCRP
REPORT 128

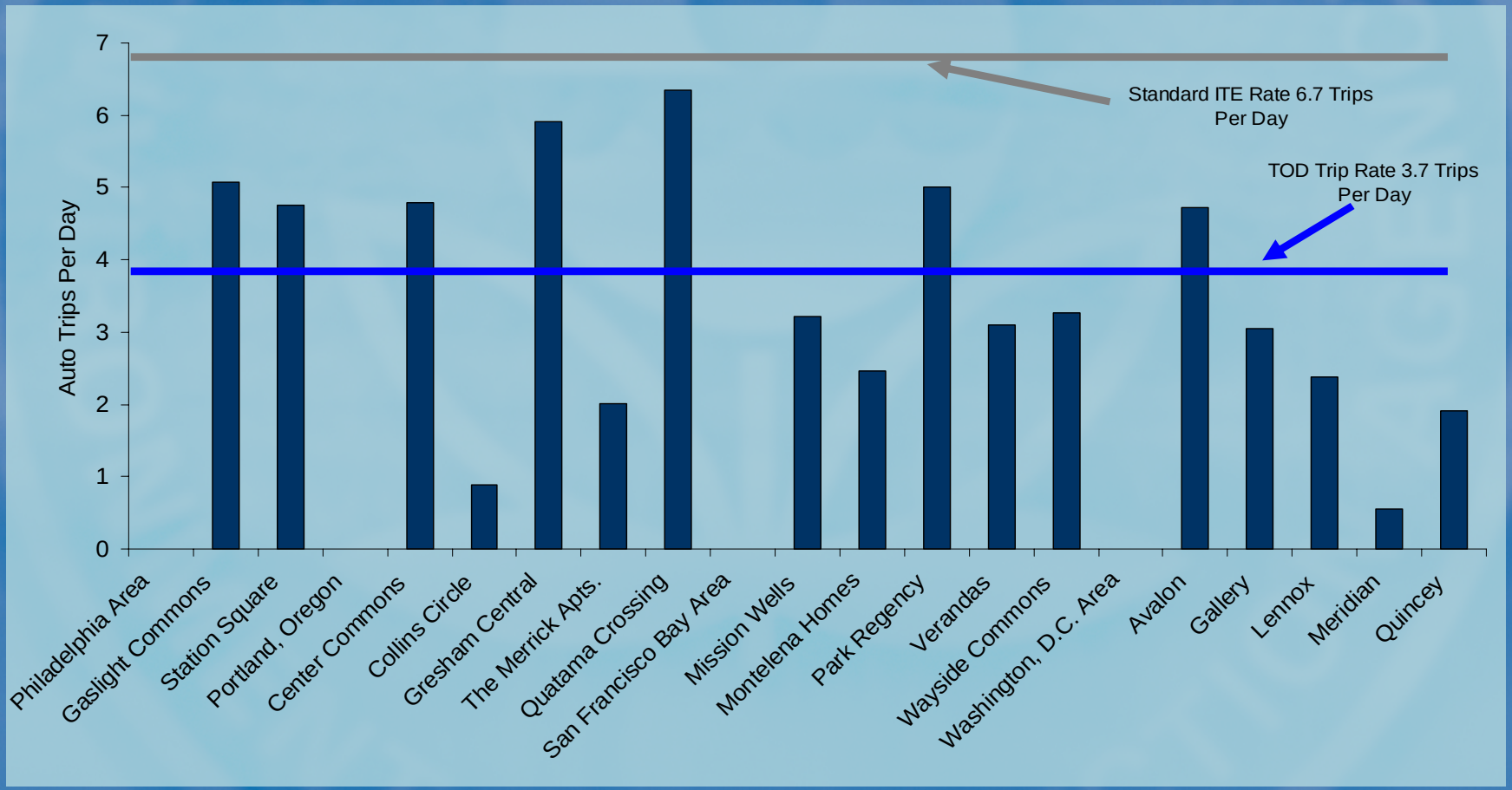
TRANSIT COOPERATIVE RESEARCH PROGRAM

Sponsored by
the Federal
Transit Administration

Effects of TOD on Housing, Parking, and Travel

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

TOD Traffic Compared to Traditional Projects



Mixed Use Trip Generation Tool

- National Study of Mixed Use Areas
  - 239 mixed use developments
  - In six different regions
  - Over 30,000 trip records
- Resulting Tool More Accurately Accounts for…
  - Trips that stay on site
  - Trips that leave, but use transit
  - Trips that leave, but are on-foot

Residential Development – Current White Flint Patterns vs. Montgomery County Average

- Households in Sector Plan Area
  - 22 miles per day
- Average Montgomery County Household
  - 42 miles per day
- 9,800 units

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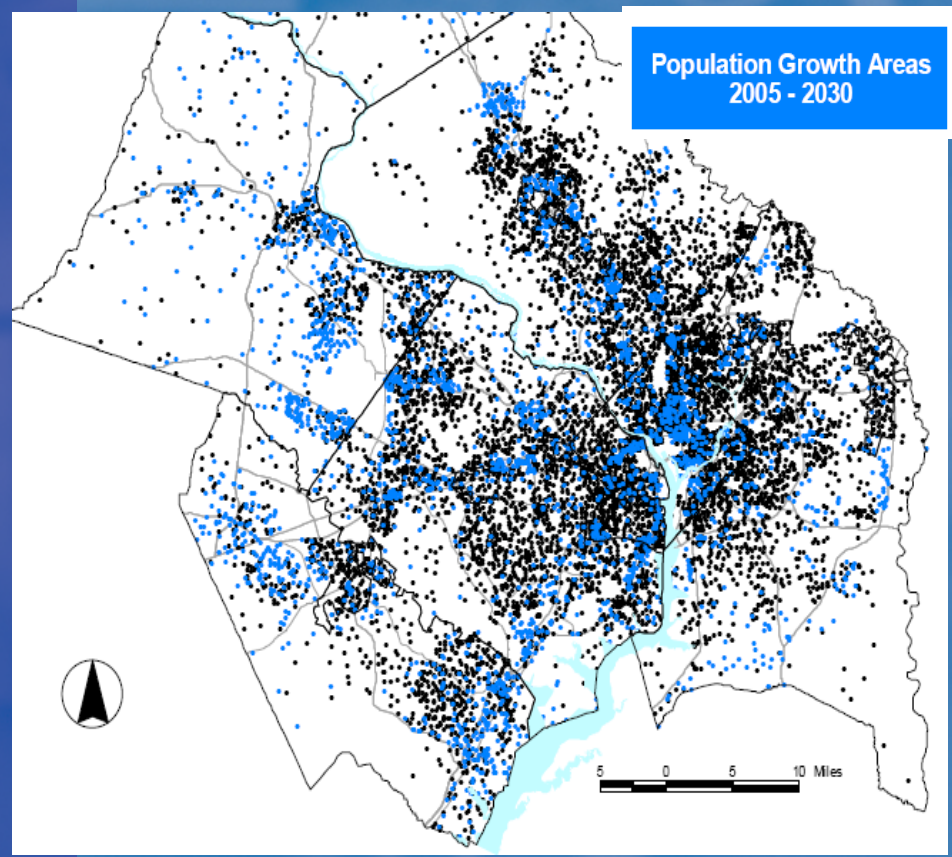
Reduction of
30,400 M Tons CO_2
each year



Traditional Configuration vs. Mixed Use

Source: EPA White Paper: The Placemaking Premium. Victor Dover. 2007. Illustrations courtesy of Dover Kohl and Partners.

Traditional Configuration vs. Mixed Use

Figure 8: Rockville Pike Boulevard and Promenade Cross Section

Source: EPA White Paper: The Placemaking Premium. Victor Dover. 2007. Illustrations courtesy of Dover Kohl and Partners.

Mixed Use and On-Site Capture of Trips

- Improved Jobs Housing Balance
- Large Scale Project
  - Greater chance of trip origin and destination match
- Lots of Destinations within Walking Distance

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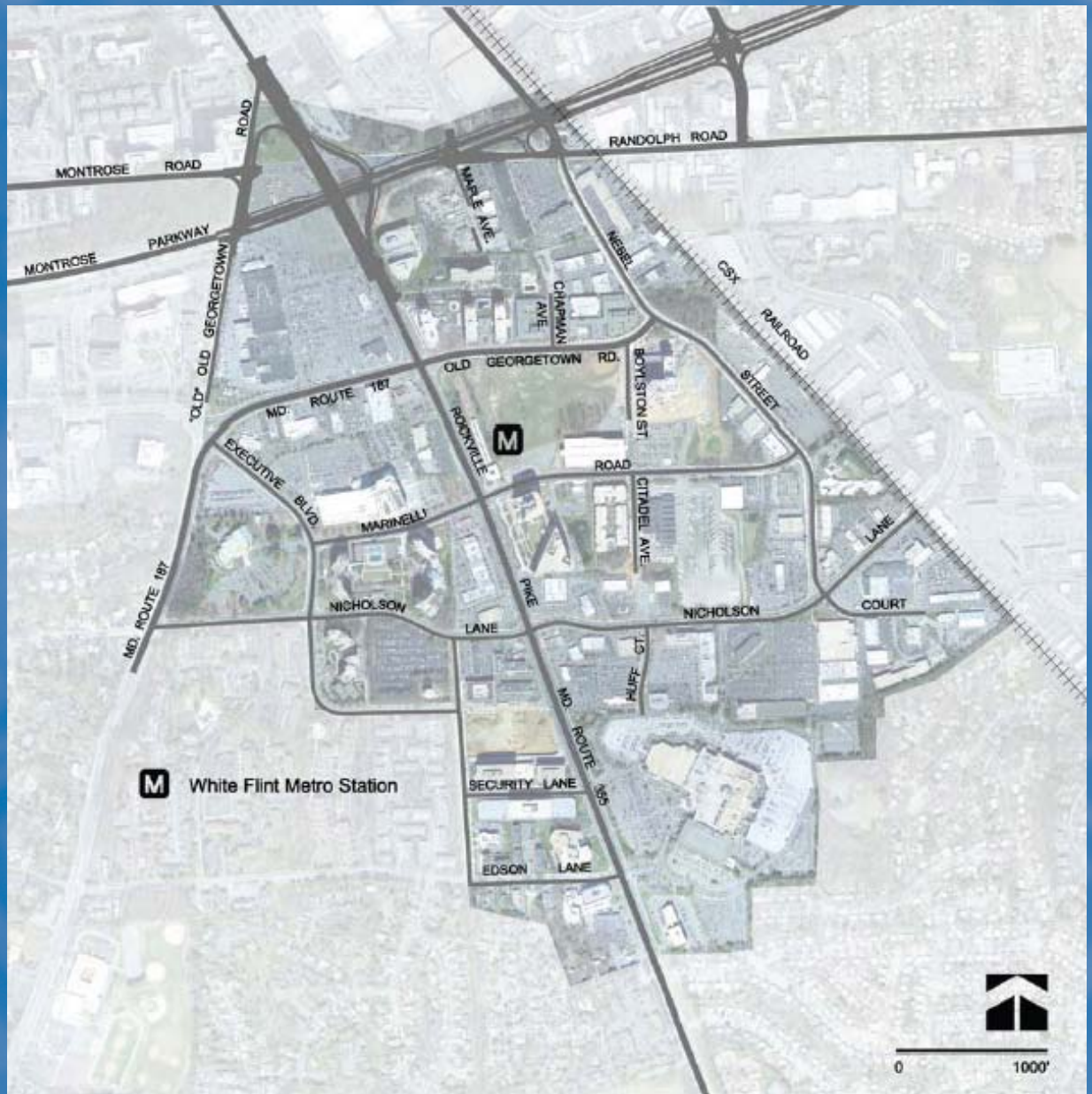
Reduction of

8,678 M Tons of CO_2

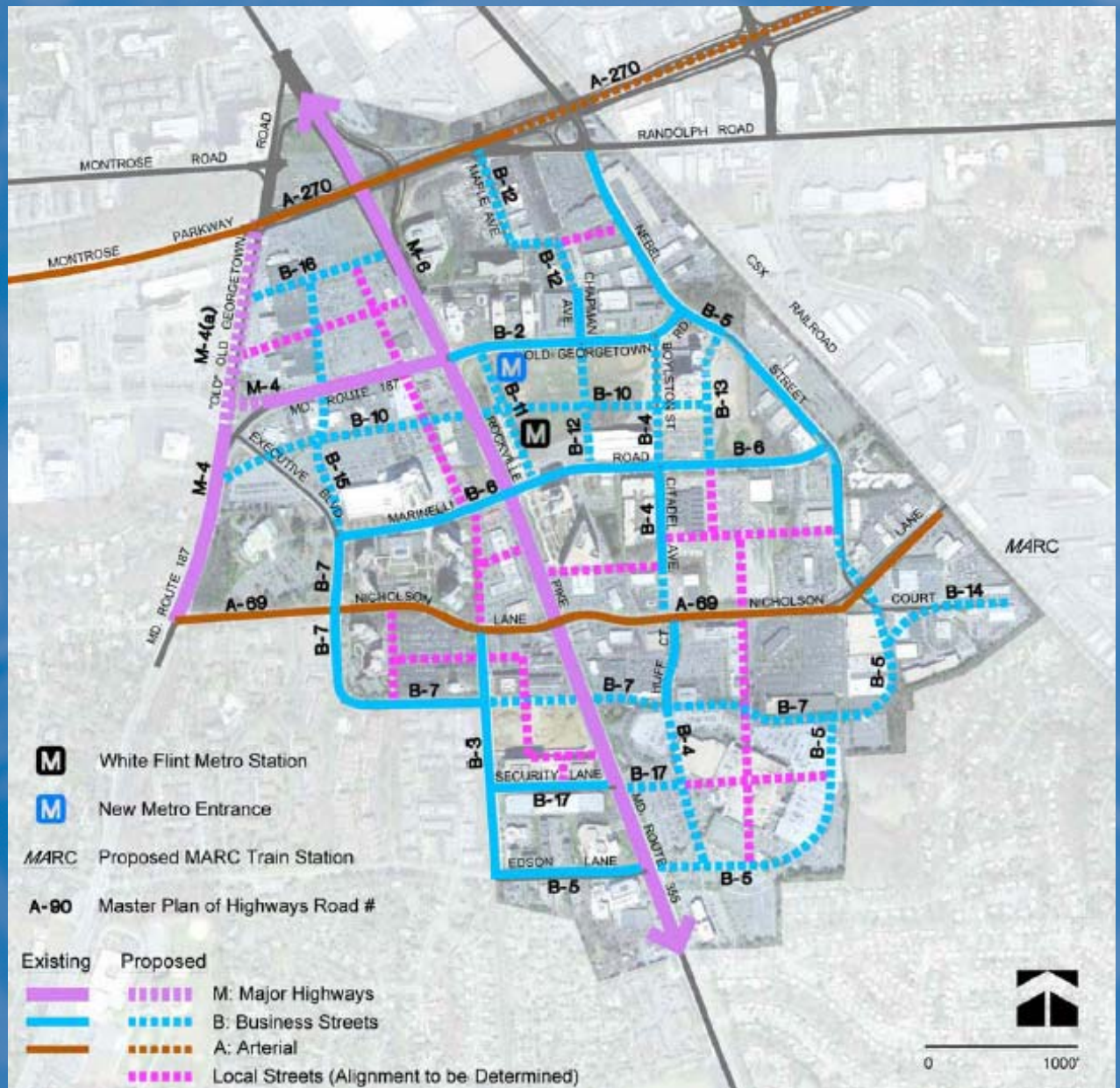
Source: EPA White Paper: The Placemaking Premium (2007) Illustrations courtesy of Dover Kohl and Partners.

Figure 8: Rockville Pike Boulevard and Promenade Cross Section

Street Design



Street Design



Pedestrian Connectivity and Walkable Design

- More than 3x as many intersections
- Smaller block size
- Lower traffic volume on each street

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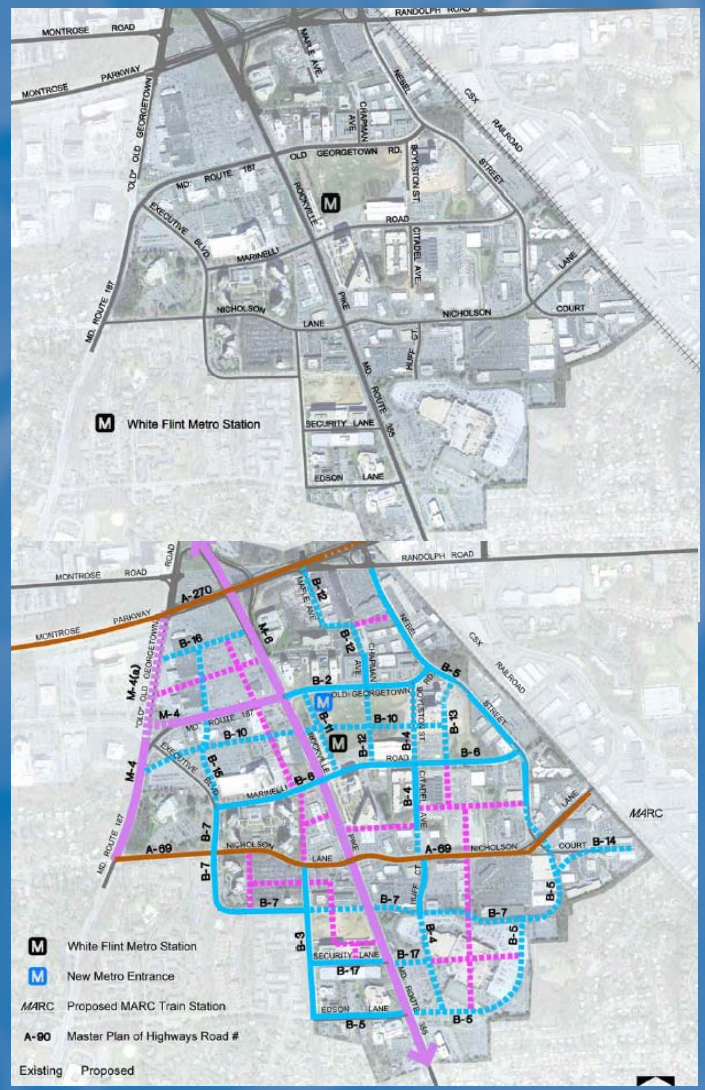
Reduction of

6,889 M Tons CO_2



Neighborhood and Regional Accessibility

- 18,000 jobs within 1 Mile (Twinbrook Area)

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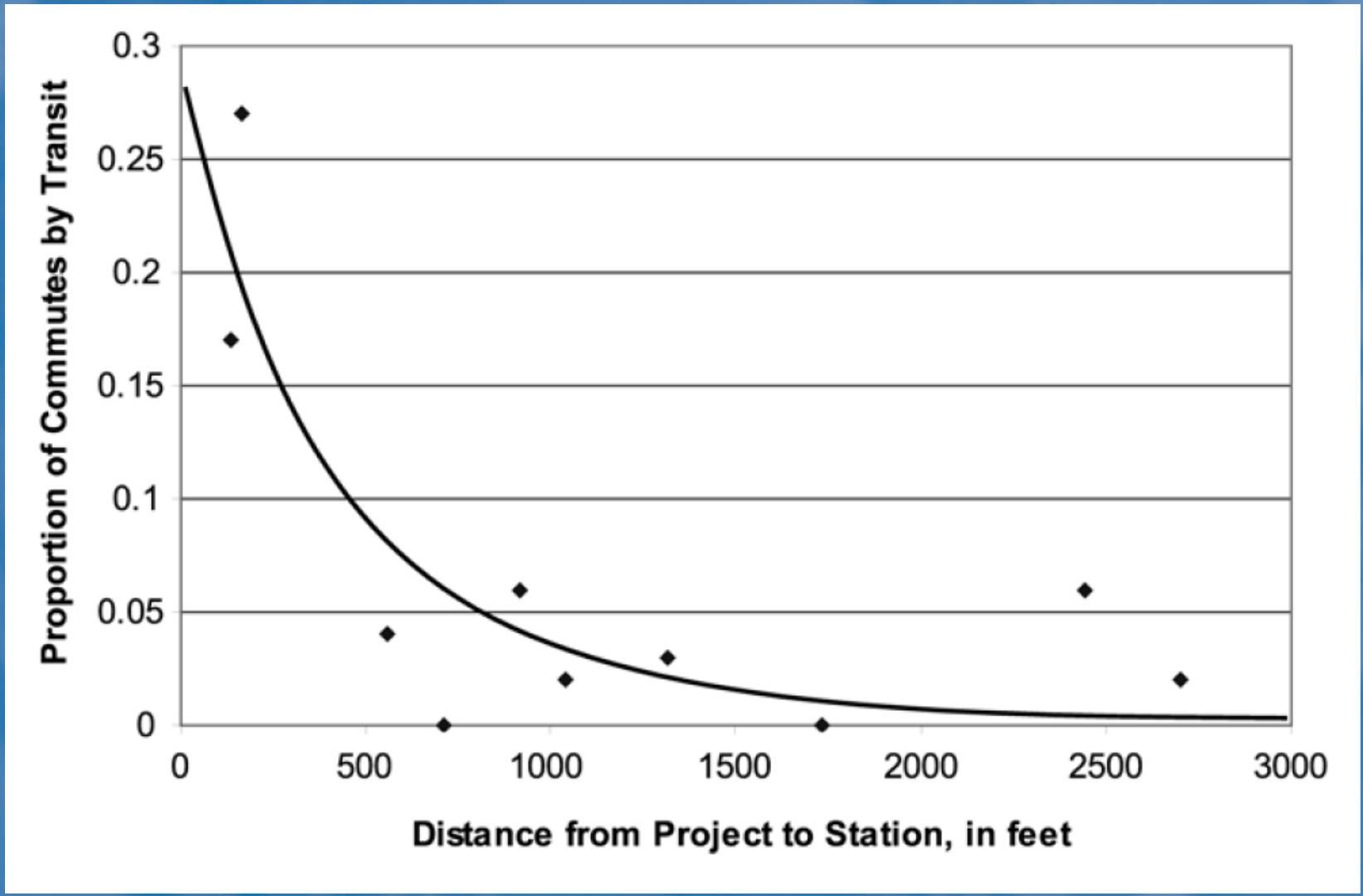
  3,489 M Tons CO_2

- 678,000 jobs within 30 Minute Transit Trip

  =

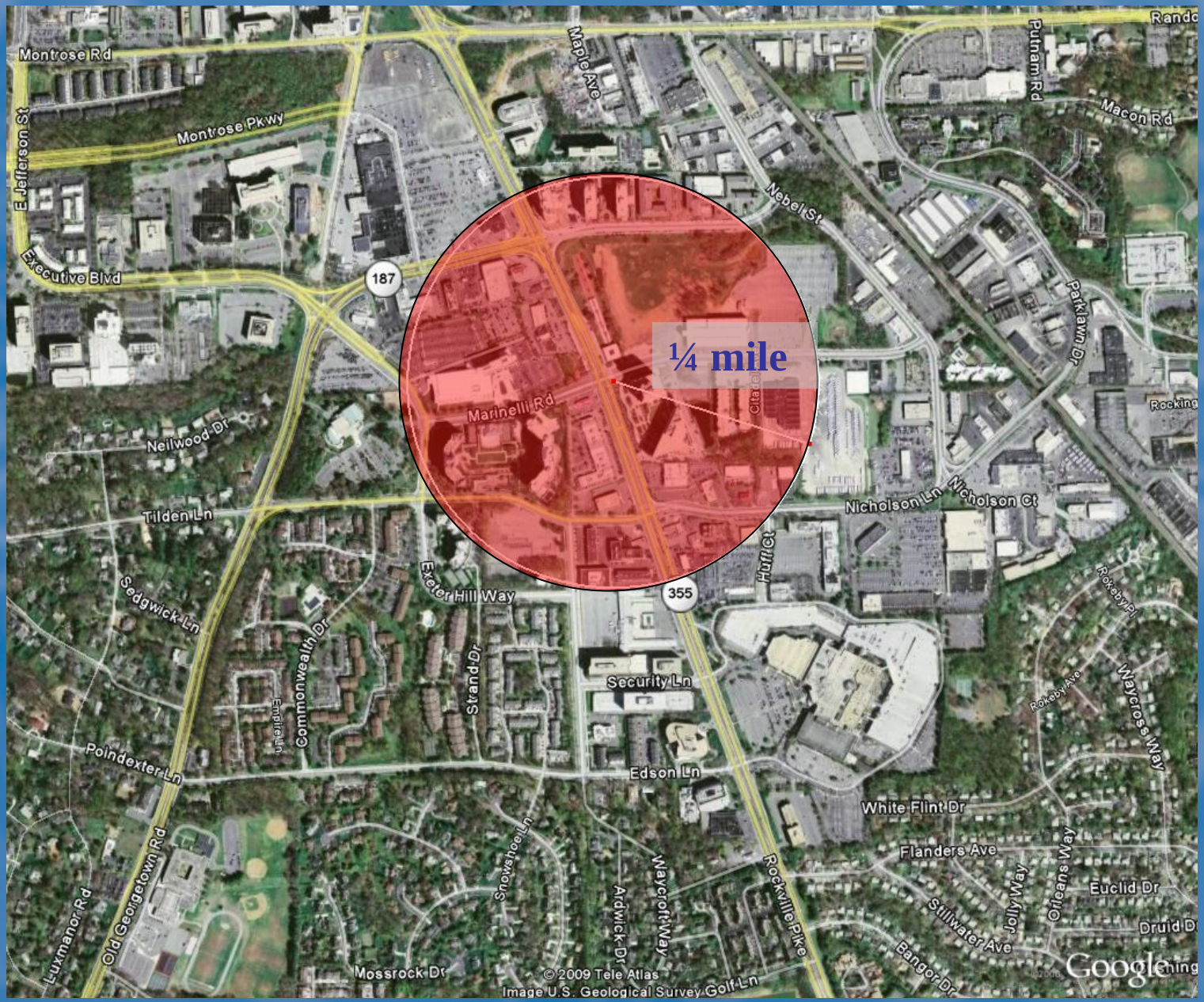
  Reduction of 5,072 M Tons CO_2

How Close are You to the Station?

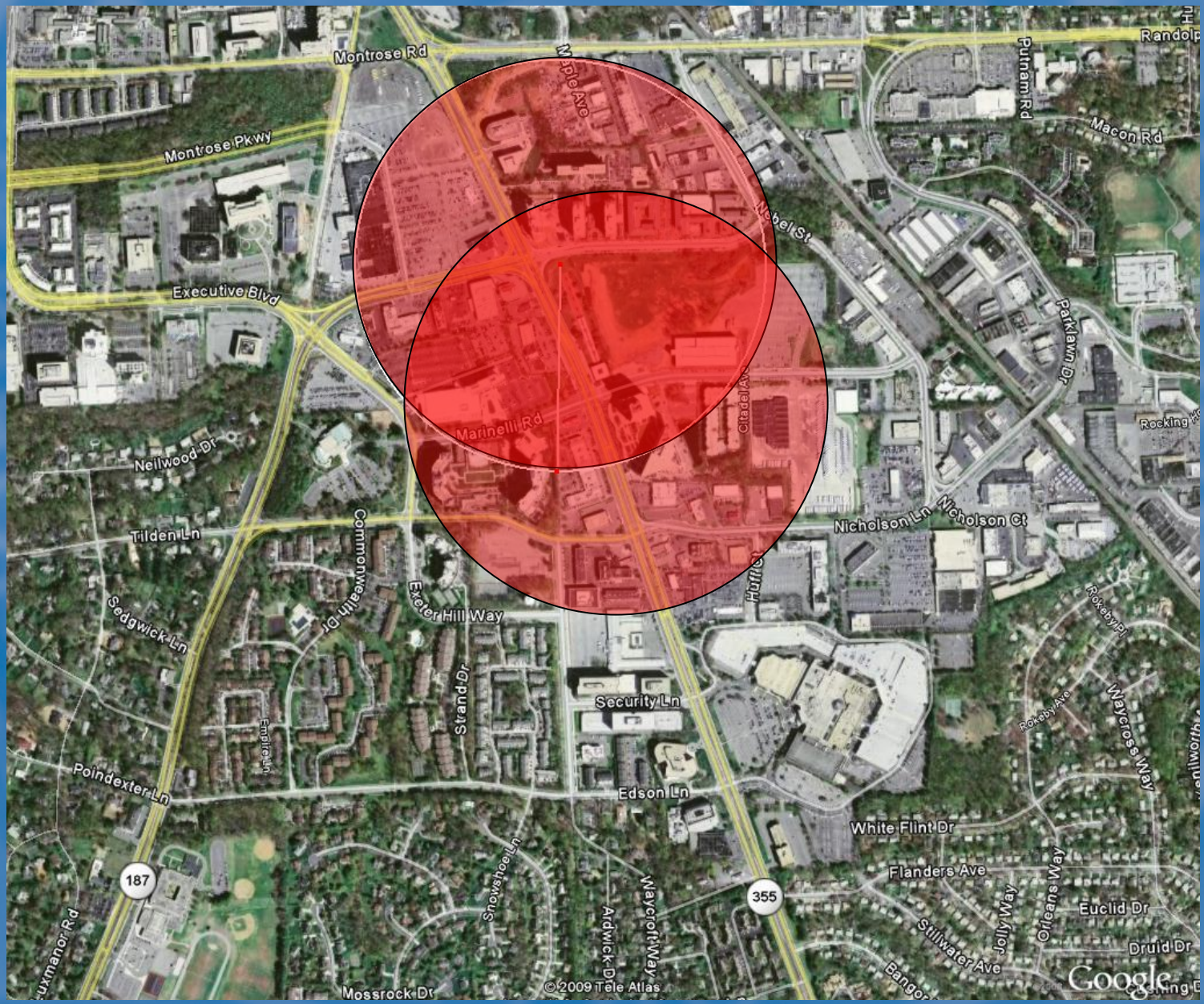


Source – Cervero (2006) Office Development, Rail Transit, and Commuting Choices

The Value of a Second Entrance



The Value of a Second Entrance



Policies Also Matter …
Transit Frequency, Parking, & Transit Passes

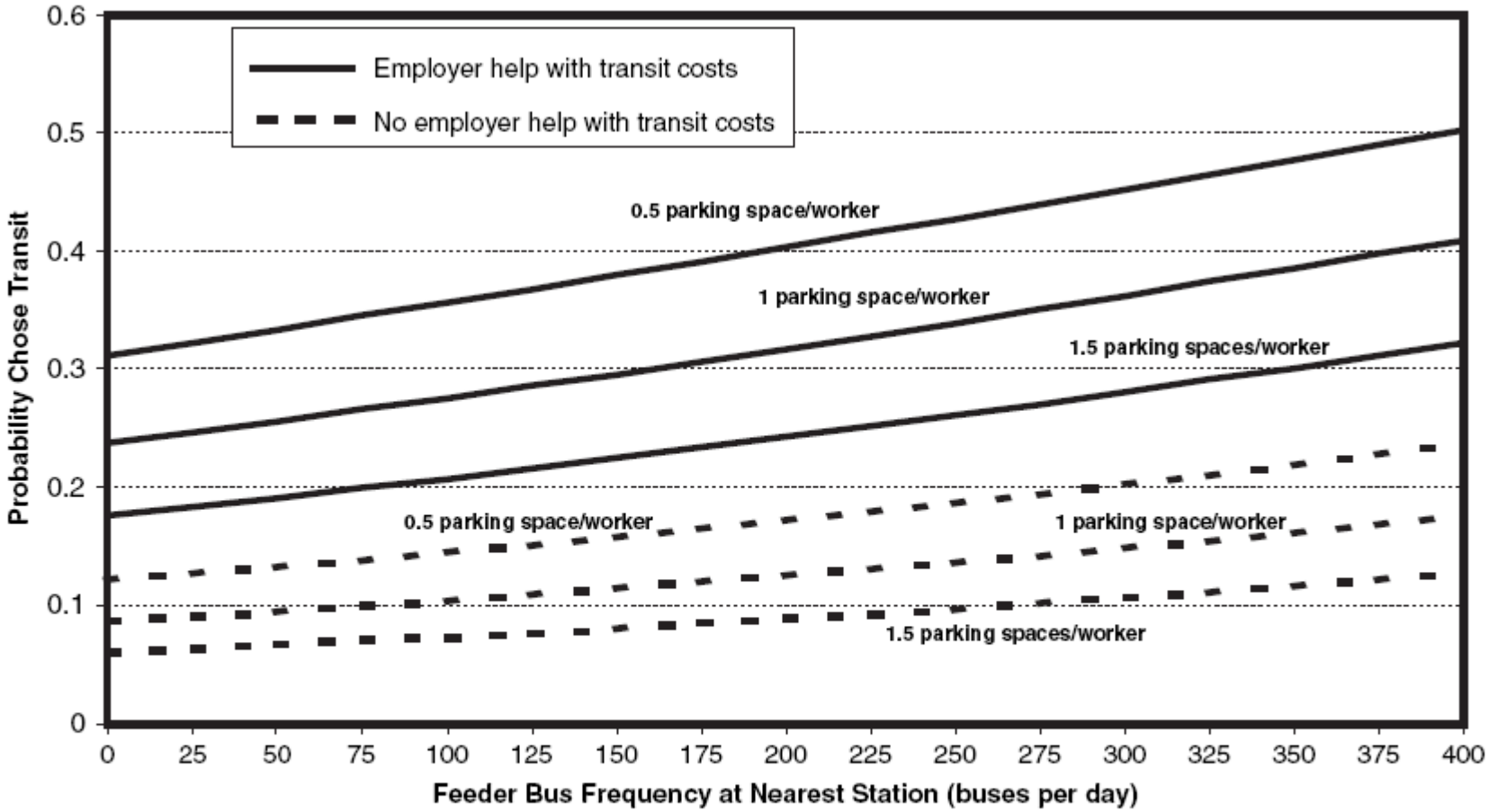


Figure 1.1. Sensitivity of rail commuting to parking prices, availability of flextime work schedules, and travel time ratios via highway verses transit, based on modeling for predicting the likelihood of California station area residents commuting by rail transit in 2003 (Lund et al., 2004).

Source – Cervero (2006) Office Development, Rail Transit, and Commuting Choices

Significant Transit Ridership Close the Stations

Share of Development by Distance to Station

- Commercial
  - 14% < 1/8 mile
  - 23% < ¼ mile
  - 54% < ½ mile
- Residential
  - 9% < 1/8 mile
  - 21% < ¼ mile
  - 51% < ½ mile

MXD model – 3% reduction
Detailed distance analysis –9% reduction

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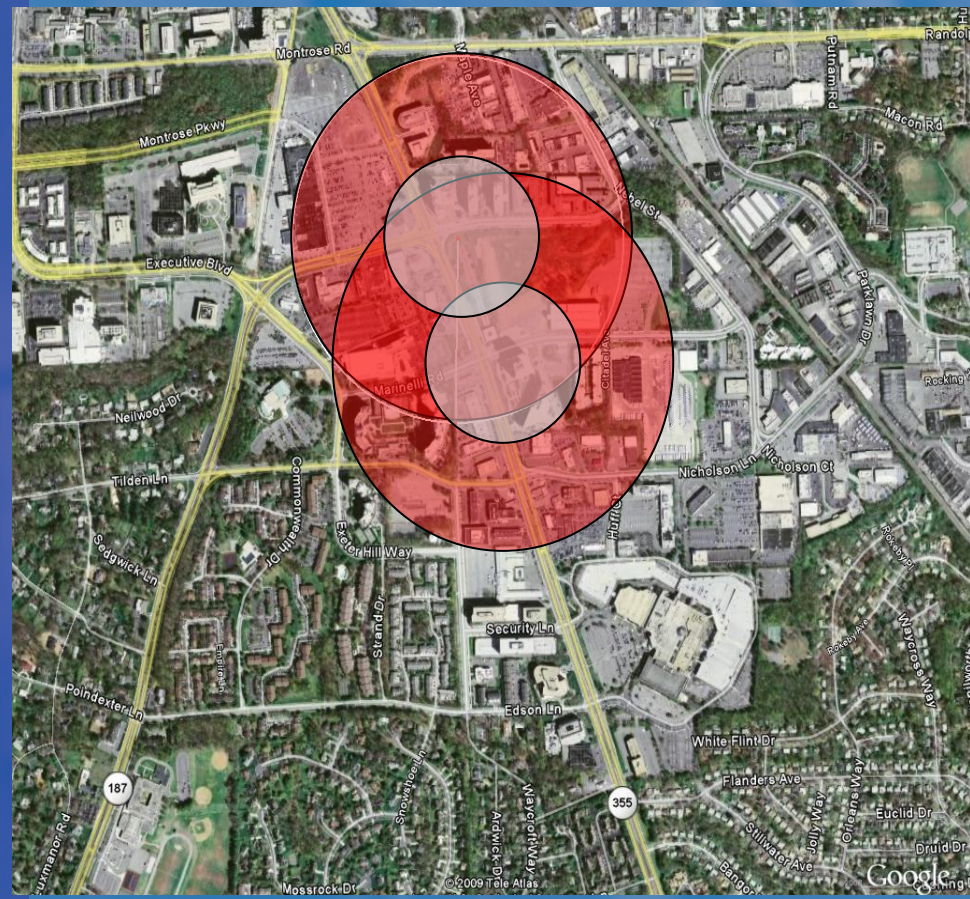
Reduction of
14,283 M Tons of CO_2



The Bottom Line

- Simple Residential Comparison – Current White Flint Travel vs. County Average
  - Reduction of 30,000 M Tons of CO_2
- Sector Plan Configuration – Excluding the Reductions Due to Shorter Average Car Trips
  - Reduction of 25,500 M Tons of CO_2
- Sector Plan Configuration with More Significant Transit Ridership
  - Reduction of 34,000 M Tons CO_2